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Drawing and Acting as User Experience Research Tools

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ABSTRACT
This paper discusses the use of participant-generated drawings and drama workshops as user experience research methods. In spite of the lack of background literature on how drawings can generate useful insights on HCI issues, drawings have been successfully used in other research fields. On the contrary, drama workshops seem to be increasingly popular in recent participatory design research. After briefly introducing such previous work, three case studies are presented, illustrating the use of drawing and drama workshops when investigating the relationship between media technology users and two specific devices, namely televisions and mobile phones. The paper focuses on the methods and discusses their benefits and the challenges associated with their application. In particular, the findings are compared to those collected through a quantitative cross-cultural survey. The experience gathered during the three case studies is very encouraging and calls for additional reports of UX evaluations involving drawing- and theatre-based exercises.

Author Keywords
Acting; drawing; user experience; television; mobile phone.

ACM Classification Keywords
H.5.2 **[Information Interfaces and Presentation (e.g. HCI)]:** User Interfaces – evaluation/methodology.

INTRODUCTION
Exploring detailed aspects of people's life can be done in many ways: Standard ethnographic methods include interviews, activity logging, or remote prompting. These methods help researchers immerse into people's life more or less deeply and over various time periods, from a specific point in time to several weeks, months or even years. However efficient these methods are, they suffer nonetheless from a number of shortcomings, such as being time consuming in planning, conducting and analysing. Sometimes one might need a snapshot of a specific part of people's life from a sample of participant bigger than what can be afforded using the abovementioned methods. Another criticism that these methods can face are the little creativity they rely on. They are indeed not suitable for developing possible scenarios in which technology meets prior personal experiences.

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Two motivations for revisiting the UX researcher's toolbox are at play in the abovementioned scenarios: Firstly, decreasing the resources necessary to measure personal user experiences; and secondly to develop possible future use cases for technological products or services based on prior experiences and personal emotions. Tackling the former issue, rapid UX evaluation strategies have been developed and applied. Beebe for instance introduced and defined "Rapid Assessment Process" [3], and Millen further proposed to focus on three key aspects of evaluation design [13]: Focus and key informants (to limit the amount of data collected), Interactive observations (to improve the quality of the data collected), and Collaborative data analysis (to help analysing the data collected).

Concerning the second issue, participatory design workshops are a common way to investigate how people perceive technology and what is expected from it. Additionally, investigating technology use through the lenses of performative art has been recently called for by researchers interested in practice-led research [7] and ubiquitous media [9]. Theatre-based methods are perceived as a promising way of supporting the design process of mobile IT [17] and for gathering requirements, especially with non-tech savvy populations [15].

This paper examines how drawings and acting can support the two abovementioned challenges in evaluating Human-Computer Interaction with technology, specifically with novel television and mobile technologies. On the one hand, drawing tackles the methodological challenge of providing deep insight on test participants' personal matters in an easy way, in a timely fashion, and using a relatively large sample size. The type of personal stories collected and the level of intimacy user experience (UX) researchers can access through drawings will be exemplified through the application of the method to a specific research agenda, namely investigating the relationship between users of televisions and mobile phones and these devices. On the other hand, acting is used here as part of a workshop mixing reflection upon personal experiences with TV and mobile phones, and generation of creative scenarios involving such technology. Prior to acting mini-plays created in groups, workshop participants reflected on their personal relationship with the technology via simple individual exercises, including story creation and drawing. The results from these exercises are briefly presented, in

order to illustrate the approach and discuss the benefits and challenges of including a theatre-based exercise in a technology oriented workshop.

The studies documented in this paper took place in two distinct cultural environments, namely Danish and Japanese universities. The study conducted in Japan happened during a six month visit to the institution as part of the author's doctoral study. The socio-historical approach to media studies taught at the Japanese institution encouraged the author to investigate technology-free user study tools. Moreover the cultural and linguistic gap experienced during the stay provided an excellent opportunity to try non-verbal UX investigation methods. Denmark and Japan are two ICT societies within which media technology is ubiquitous, thus comparing the findings collected in both countries is expected not only to put forward converging trends and differences in how televisions and mobile phones are perceived and used, but also to reveal culture-related issues in the application of drawing and acting as user research methods.

DRAWING AS A RESEARCH METHOD

Drawings and sketches have been part of humans' communication tools palette since their early evolutionary stage. Whether it is for visualizing specific ideas, expressing artistic inspiration, supporting learning process, or ensuring durable memory, drawings are used almost everywhere. In fact when learning how to express themselves, humans rely on drawings very early, prior to writing. In their first years of life, children learn to use drawings as a communication mediator. At the same time, the child gradually includes writing in the drawings, enhancing clarity in the ideas expressed [1]. The important role drawings play in human development explains the vast academic literature available related to children's drawings and their interpretation.

Simple drawings can help convey complex ideas, especially in the business world [16]. Drawings help clarifying ideas, expressing them rapidly without the need for complex technology, and sharing them openly encouraging discussions. It is further argued that "*the value of visual information lies […] during the action of drawing*", that is during the creation process of the image rather than in the image itself [14]. Mills considers drawing as a visual conversation, for which the performance itself is crucial to make sense of the message conveyed. In design, drawings are widely used in order to illustrate and explore scenarios and ideas through storytelling, and storyboards are considered an efficient and powerful tool for illustrating a succession of events [18]. Exploring people's life, opinions and thoughts through drawing are however less popular.

Recently, ethnographers have used drawings to discuss medical conditions with patients. While using drawings for exploring how people understand illness, Guillemin demonstrated that drawings can indeed generate a broad and in-depth perspective on the study at hand. The author agrees with Mills in saying that studying the drawing produced alone is not enough, but should be complemented by the analysis of the knowledge built by the drawer while creating the drawing [6]. Additionally, Guillemin notes that a drawing is a snapshot of how the drawer understands a subject at the specific time of the drawing. She reckons the limitations of this visual expression tool and argues that drawings should be used as a complement of additional research methods. Guillemin's findings are corroborated by Kearney and Hyle who identified the following benefits and drawbacks of using drawings as a research method for investigating the emotional effects of change in an educational institution [10].

1. Drawings reveal emotional aspects that would not be covered in word based communication
2. Participant focus on the key aspect of their story
3. Drawings needs to be complemented by participant explanation
4. Response to the drawing task varies according to personal and situational characteristic that may be hard to control
5. The lack of boundaries associated with drawing alleviates participants freedom of expression
6. Likewise, researcher-imposed structure determines interpretation of drawings
7. Drawings is suitable for data triangulation when used in complement to other research tools

Furthermore, considering drawings as a support for focus groups involving children, Yuen presented evidence that drawings had the following positive effects on the study outcome [24].

8. It helped create a relaxed and comfortable atmosphere, and released the pressure to answer immediately
9. It enhanced the communication between the researcher and the children by providing further insight on the children's perspective on the topic discussed, as well as offering children the possibility to express more personal experiences
10. It allowed better identification of groupthink and gave each idea expressed an equal chance for consideration

It should also be reminded that drawings can be culturally reflective. In a study comparing children drawings in Japan and the United States, La Voy et al discovered that when drawing people, Japanese children tend to include more details and represent humans larger but with fewer smiles than their American counterpart. These differences are explained by cultural clues of how children are raised in both societies. [22]

PERFORMING USER EXPERIENCES

Similarly to drawing, acting is deeply integrated into people's life, regardless of the nature of acting (as an artistic performance or as part of everyday routine). Until 2000 acting was primarily used as a research method in social and health science [23]. More recently, designers started including role playing in participatory design

workshops occurring at early stages of the design process. In particular a group of Finnish researchers have generated a large body of work regarding the use of drama and dramaturgy in user-centred design processes. For instance Metho et al. introduces state-of-the-art theories, methods, as well as case studies in [12]. In their work, they have identified seven types of drama-based workshops, among which the Drama workshop inspired the activities further described in this paper. Drama workshops consist of a set of collaborative activities (discussions, improvisations, physical exercises, etc.) used to explore a specific issue through the participants' experiences and emotions. Examples of such workshops are reported in [20]. Titta et al. explored the issues associated with retirement using a mixture of user-centred product concept design (UCPCD) and drama-based methods. The methodological lessons learned during the experiment encourage the use of drama-based techniques in complement to more traditional approaches for several reasons. Firstly, the emotional and social dimensions of interaction are more thoroughly investigated. Secondly they provide users a way to explore their experience from a different viewpoint, which can be beneficial especially in early design phases. Last but not least, the ease of conducting drama-based workshops was put forward.

Performance-based user activities are also part of the future technology workshop described in [21]. This collaborative, participatory design technique aims at providing direct input for the design of disruptive technology by relating users to the technology in a pragmatic, open-ended, cost-effective way that requires minimal participant training. It involves participants in a sequence of seven activities, including among others, brainstorming, prototype design, scenario building and role play. The purpose of this latter activity is to contextualize the futuristic and contemporary technology models previously identified during other sessions. The present paper adapted this approach from focusing on a far future to introduce instead an altered, challenging version of current reality.

Even though the Japanese literature available in English concerning performative user experience research is scarce, it seems that theatre-based techniques have been employed in a number of UX research projects. For instance in [8], the authors relate how test subjects first identified typical scenarios of their work and acted out a selection of them in situ. This enabled the research team to thoroughly understand how people relate to these mundane tasks and better inform future design of supportive technology.

Finally, as Metho et al. argue, "the different dramaturgical and performative forms bring up elements that would otherwise go unnoticed" [12]. As a concluding remark, most studies agree on judging the role of facilitator crucial and impacting results. As developed in the next section, this impact is minimized during both drawing and acting activities, letting participants take ownership of the expression medium and use it as they feel.

CASE STUDIES

This section presents three case studies of using drawing or a combination of drawing and acting as a mean of understanding the relationship between media technology users and two media devices: televisions and mobile phones. The first case served as a pilot study in order to test and improve the drawing only approach. Nevertheless, it also generated valuable data which can be analysed. The second iteration builds from the pilot study and was conducted in a different cultural environment for potential comparison. The final case study makes use of both drawing and acting in a drama workshop involving individual and group exercises.

Pilot Study: Project Seminar in Japan

Setup and participants

The pilot study (CS1) took place as a social event during a three-day project seminar. All participants knew each other, for the project had been running for several years. After the second day's dinner, everyone gathered in the meeting room where further discussions about the project were to take place after the drawing experiment. Participants were handed a set of paper sheets. On the first sheet, a description of the author's project and the purpose of the study reminded the participants about the experiment. The four remaining sheets contained a few lines of instructions and a large empty square on the rest of the page for drawing. Pens of various types and colours were available to all participants, who could use any combination of them. Participants were sitting on the floor either in small groups or individually. Interaction between participants during the experiment was possible but not mandatory. Thirty minutes was allocated to the entire test, including introductory speech. The sets of paper sheets were collected after each participant completed his/her drawings, in order to limit potential alterations. Twenty-one participants took part in the pilot study. At thirty-six years old in average, they were mainly males (17 against 4 females), and their occupation was closely related to the academic world.

Tasks

The study investigated participants' relationship with TV and mobile phone separately: The two first sheets focused on television and the two last on mobile phone. On the first sheet participants were asked to draw the layout of their house, indicating the media devices regularly in use. Additionally, participants were instructed to illustrate media devices used simultaneously. For the second drawing, participants were asked to illustrate an impressive memory related to television. It could be a memory about anything that marked them somehow deeply. The drawings concerning the mobile phone followed the same approach: First participants had to picture themselves, depicting the mobile devices they carry around with them. Then they should recall and illustrate an impressive memory associated with their personal mobile phone.

Results

Analysing the data collected solely based on the drawings can be a difficult exercise and has been argued to be insufficient [6]. Nevertheless, as a first step into the analysis it leaves the opportunity to interpret participant answers and identify trends and categories. Later this can be used for selecting a few participants for further examining representative contributions.

Focusing on home media usage, the analysis should filter out the excess of information that appears in most drawings. Sketching the layout of the home is only the support task for studying where and how media devices are used in the home. This comment is actually valid for all drawings regardless of the topic at hand. As illustrated in Figure 1-(a), Japanese home drawings are usually complemented by text clarifying a device, piece of furniture or specific use situation. As the figure also illustrates, sometimes the drawing integrates information that does not relate directly to the topic (such as the location of windows or various rooms in this example). In such cases the researcher needs to separate primary information, directly relevant and to be immediately analyzed from secondary information, which may still be useful to complement the primary findings at a later phase of the analysis.

When asked to depict a memory related to television, the majority of Japanese participants portrayed memories related to the TV content, and little about the device itself or the social interaction around it. Half of the memories involved the participant alone, and one third involved family members (Figure 1-(b)).

Self-depicting oneself leads to reflecting on one's behaviour, which some Japanese participants expressed through there drawings. Additionally, four participants specifically represented several situations in which they carry mobile devices. In general, participants depicted themselves carrying 2.5 mobile devices (such as mobile phones, computers, or music players). A few considered more exotic devices (e.g. watch, transportation cards). Concerning mobile phones, they were mostly located in a pants pocket, often in a bag and sometimes in a jacket pocket. Figure 1-(c) is an example of typical self-depiction.

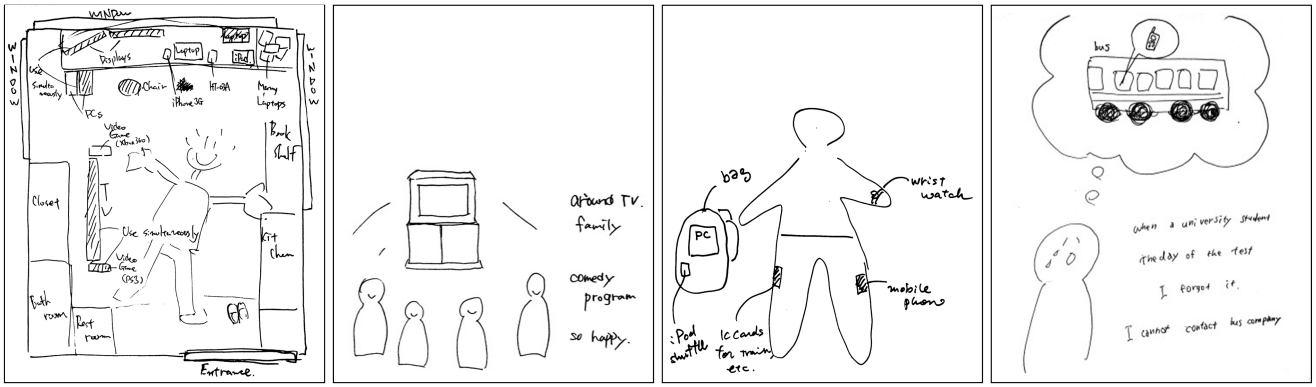
Finally, memories about mobile phones mostly related to experiences where the device had been broken, forgotten, lost, or otherwise misused (as depicted in Figure 1-(d)), as well as specific use situations. Those memories were mostly associated with negative feelings, rather than positive or neutral ones. Even more than with memories involving TV, mobile phone related memories concerned the participant alone.

Study 2: Graduate Course in Denmark

The second experiment (CS2) repeated the pilot study in a different cultural context, and included a few minor modifications in the setup. The participants also differed in the second study as all were graduate students attending a User Experience Design course. The tasks however remained strictly identical to CS1.

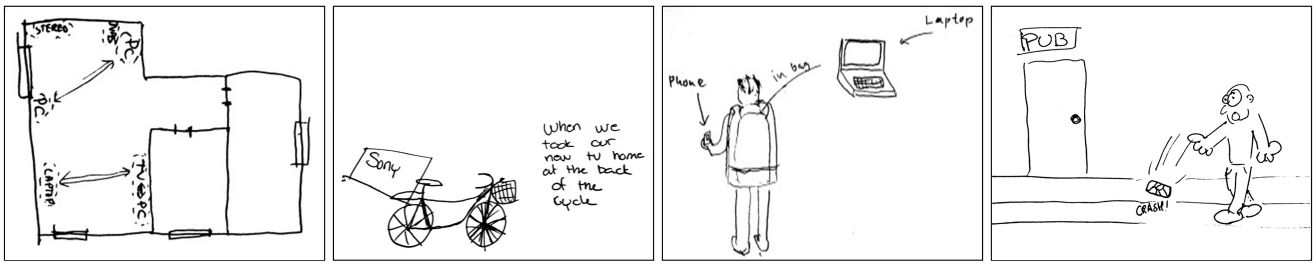
Setup and participants

This study took place during a two-hour lecture introducing students to qualitative methods for user experience research. The exercise was conducted after a short break at the beginning of the second hour of the lecture. The lecturer gave a brief and general introduction to the method before starting the exercise, which lasted about 20 minutes. The task sheets differed from the pilot study by the size allocated to each drawing. In order to avoid potential blank page syndrome, two drawings were expected per page, instead of one per page during the pilot. Participants were sitting at their desk as during the lecture and could interact between each other. Pens were distributed to participants who didn't have one. Thirty-seven graduate students took part in the second study. They were again mostly males (26 against 11 females) and 24 years old in average.



(a) (b) (c) (d)

Figure 1. Drawings collected during the Japanese project seminar illustrating a home and media devices in use (a), an impressive memory involving TV (b), a self-depiction including mobile devices (c), and an impressive memory involving mobile phone (d).



(a) (b) (c) (d)

Figure 2. Drawings collected during the Danish graduate course illustrating a home and media devices in use (a), an impressive memory involving TV (b), a self-depiction including mobile devices (c) and an impressive memory involving mobile phone (d).

Results

Drawings from the Danish students could be categorized in a similar way than the Japanese ones. The home drawings can be classified in two categories according to the amount of details included. The range of complexity between drawings varied considerably from minimalistic (illustrated in Figure 2-(a)) to very detailed, a short majority belonging to the former category.

When it came to remembering a remarkable event related to television, Danish students mentioned the device itself in majority, mostly illustrating scenes of use or acquisition (illustrated in Figure 2-(b)). Memories related to the TV content as well as the surrounding social environment were also mentioned. The people involved in most of these memories as well as the associated feelings were unclear and were matter of interpretation. This would call for further discussion with the author.

Danish students represented themselves carrying 1.8 mobile devices in average, mostly focusing on the cell phone, sometimes complemented by a laptop or music player. Most participants represented themselves using their mobile phone, hence carrying it in their hand (as illustrated in Figure 2-(c)). The second most popular location for carrying mobile phones was the pants pocket. A surprisingly representative number of drawings pictured the user and devices separately.

Finally, memories related to mobile phones referred equally to situations in which the device was broken, lost, or misused, than to specific use situations (as illustrated in Figure 2-(d)). Those memories involved mostly the participant alone. As with TV-related memories, the feelings associated with mobile phone memories were very hard to identify without making assumptions based on the content depicted.

Figure 3. The scale of emotions used to described feelings: anger – sadness – neutral – surprise – joy

Study 3: Drama Workshop in Japan

The third study (CS3) reported in this paper illustrates the use of drawing as scenario building and acting as research methods to generate creative use of television and mobile technology based on prior personal experiences with those devices. The workshop took place during the author's stay at the foreign institution mentioned in introduction.

Setup and participants

In this study, 12 undergraduate and graduate university students (aged 26 in average) engaged in a series of individual and group exercises, during a four hour drama workshop. Most of the participants knew each other beforehand, even though they were not necessarily studying together. The workshop took place in a meeting room, in which tables and chairs were arranged to suit groups of 3-4 people working together. In general the workshop followed the approach described earlier as a drama workshop, but the chosen exercises were inspired by McCarty's work on enacting participatory development [11] and Theodor's creative method workshops [19].

Exercises

In order to get the participants in a creative and playful mood, they first took part in an icebreaking group exercise. All participants wrote down a simple sentence about television or mobile phone following the structure "*I <do something with the device>, to <purpose of doing it>*". Half of the participants were asked to create such sentence related to TV, and the other half to mobile phones. The paper sheets on which participants wrote their sentence was then cut at the coma, and the second parts redistributed so each participant would get the ending of a sentence corresponding to the device they did not write about. Each participant then read out loud the newly created sentence, and very briefly tried to argue for its possible meaning. The following is an example of such sentence: "*I change channel to 8, to separate a little bit from business mail*".

Then, the first individual exercise inquired participants about their personal attachment to television and mobile phone, respectively. For each device, participants were

asked to (1) indicate on a scale of emotions (anger, fear, neutral, surprise, and joy, as depicted in Figure 3) which ones would likely apply to them in case they didn't have the device anymore, (2) write down on cards up to three functions of the device they consider essential, and (3) select among a list of 36 adjectives those which best describe the device according to them. The emotion scale is derived from cross-culturally validated Ekman's list of six basic emotions [4][5], from which disgust and fear were discarded as deemed irrelevant in a technological context. The list of adjectives consisted of 18 pairs of bi-polar descriptors of objects, such as public and private, hot and cold or polite and rude.

In the second individual exercise, participants integrated the functions they previously identified for both devices into illustrated mini-stories. They were provided with a set of cards representing a problem (lost, fire, late, etc.), a location (workplace, plane, restaurant, etc.), a mood (anger, fear, joy, etc.), and a social setup (family, best friend, colleagues, etc.), which they should integrate in their stories. The purpose of randomly setting up the scene for participants was to provoke them into imagining using familiar technology in unfamiliar setups. To illustrate their stories participants had at their disposal a drawing notebook each, pens of various types and colours, scissors, and empty cards to possibly add functions.

After a 20 minutes break during which participants relaxed and chatted, random groups of three were formed. As a first group exercise, each participant should display and explain his/her story to the other two group members, who would discuss it briefly. Then they should collaborate to create a common story to be later performed in front of the other groups, inspired by the three personal ones. They were allowed to discard or add elements to the story, but were encouraged to keep as many of the technological functions as they could. Finally, the room was rearranged and a scenic space created, on which each group acted out their mini-play, each lasting about five minutes.

Results

Analysing the data collected during this workshop consisted in two parts. Firstly, studying the answers from the first individual exercise related to the relationship between participants and mobile phone/TV. Secondly, tracking the evolution and possible modifications of the individually selected functions and their potential inclusion in the mini-stories and mini-plays.

Personal relationship with TV and mobile phones

When asked about their anticipated emotions if TV and mobile phones were not accessible to them anymore, participants reacted differently for both devices. While the imagined loss of television left the participants largely neutral, despite mild sadness and surprise, the idea of not having a mobile phone anymore provoked great sadness and mild anger.

The analysis of the selected adjectives reveals further discrepancy between the perception of mobile phones and TV. The top five adjectives associated with each device are:

- **Television**: Passive (75%), Loud (50%), Exciting (42%), Public (42%), and Lazy (42%)
- **Mobile phone**: Convenient (92%), Personal (84%), Private (67%), Small (50%), and Active (42%)

If in general these findings were to be expected, it confirms nevertheless current general opinion about what TV and mobile are about in a heavily connected society with ubiquitous media access: Namely the passive and shared consumption of TV content, contrasting with the discrete, active use of the mobile phone that is always carried around. Additionally, the difference in amplitude of the replies is worth noticing. Similarly to the previous exercise, participants reacted more strongly about the mobile phone characteristics than they did for the TV ones. This indicates a strong relationship (personal and private) with mobile phones, compared to a more distant connection (due to its public and loudness features) with TV.

Technological functions, mini-stories and mini-plays

Each participant identified functions s/he considers essential for mobile phones and televisions. Then they all created mini-stories around these functions. Finally these mini-stories inspired the groups of 3 participants in creating and acting out a mini-play. These mini-plays thus include some of the functions previously put forward by each participant. Tracking down how the functions have been used and/or modified throughout this creative process not only provides a better understanding of how important they are for users individually and as a group, but also informs about the group dynamics during such an activity.

In average each participant thought about a little less than 5 functions to be essential for both devices. The 56 functions named can be categorized into the following eight clusters based on their similarity: Access to information, Specific use, Communication, Design + specification, Entertainment + relaxation, Secondary function, Music + sound, and Others (unspecific, etc.). Surprisingly, even within the clusters, the functions cited are little redundant, and instead tend to cover various aspects of the same issues.

When creating their individual mini-stories, participants used most of the functions they identified as essential, discarding only 13% of them. Three quarters of the functions kept were then used unmodified in the mini-stories, while the rest was modified to better fit the story. At the end of the group work however, only a third of the original functions were kept untouched, the rest of the 32 remaining functions being modified during either of the exercises. Additionally, if participants only used the functions they generated in their individual mini-stories, 15% of those used in the group mini-plays were new ones, created to fit the purpose of the plays. These observations illustrate the participant willingness to reach group consensus, when merging their ideas together, contrasting with their intent to use all the elements they have at their disposal when creating their own stories. Examples of mini-stories are given in Figure 5.

Regarding the content of the stories, the degree of realism evolved between individual stories and group plays. If all individual mini-stories are highly realistic in terms of environmental settings and how the technology is put into use, the group mini-plays were much more surreal, especially with regard to the scene setups. Furthermore the groups used the context cards in different ways: Three groups reused 67%, 83% and 100% of them, while the last group only used one card unmodified to fit the story, while half of the other cards could only be somehow considered implicitly in the play. Extracts of the four groups mini-plays are displayed in Figure 6.

DISCUSSION

The following topics emerged while evaluating the data collected through the three studies. They aim at informing HCI researchers interested in adopting drawing and/or drama workshops to investigate UX with technology.

Personal Matters

It seems that drawing facilitates the expression of personal matters. In both Japan and Denmark, intimate stories were depicted in the drawing-only workshops. We argue that these stories would take longer to collect through verbal interviews, as the act of drawing provides both a personal sphere to reflect in (centred on the paper sheet), and time to think and organize one's thoughts. It is further argued that drawing provides an opportunity for reflecting on one's behaviour, which opens for further discussions with the drawer. For instance both Japanese and Danish participants realized that they were sometimes using two phones at the same time and that could be considered strange.

Ubiquitous Mobile Phones

Cultural factors should be considered when asking people to remember a remarkable event related to a specific device. Some participants in both Japan and Denmark (two countries with a high rate of always-on users) expressed their difficulty to think about such a memory related to mobile phones. In fact they considered the device to be so embedded in their everyday life that finding an extraordinary event linked to it was hard. The very strong personal character of mobile phones was also noticeable in all case studies: Participants reacted more strongly when inquired about phones than about televisions.

Japanese vs. Danish Drawings

For what concerns the memory-based drawings (CS1 and CS2), in general Danish drawings were more ambiguous and harder to interpret on their own than the Japanese ones. For instance it was easy to determine whether a Japanese memory was associated with positive, negative or neutral feelings. On the contrary drawings collected in Denmark were ambiguous and could only be guessed. In both countries most memories related to mobile phones referred to the use or misuse of the device by the participant alone. However when remembering an event related to TV, Japanese participants referred mostly to the TV content, while Danes focused on the device more frequently. Japanese also visibly experienced these events either alone or with family members, while Danes were more ambiguous on the matter. Regarding the story-based drawings (CS3), all but one of the stories were easily understood without further insight from the drawer.

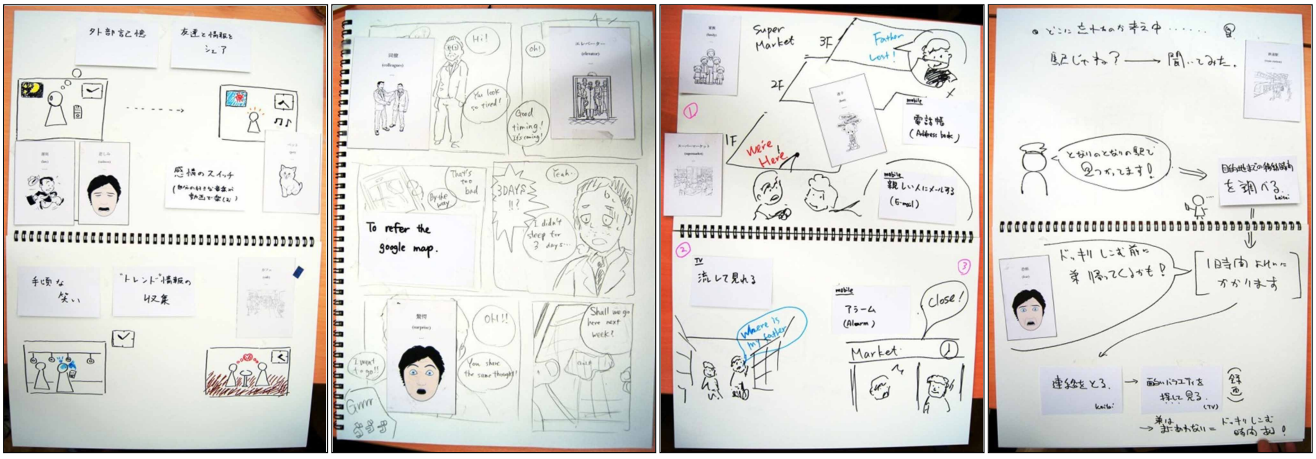


Figure 4. Extracts from individual mini-stories created by four participants.

Figure 5. Extracts of the mini-plays acted by the four groups.

Acquaintance among Participants

Even though the participants produced the drawings (including as mini-stories) on their own, the presence of colleagues, friends or strangers around might influence productivity and the level of attention to details. However, the drawings collected during the three case studies seem to indicate no such effect. It could even be argued that both familiar and unfamiliar social surroundings may positively influence how people draw. In a familiar social setting, one might want to impress or amuse friends, and when surrounded by strangers, one might want to appear assiduous. In both cases, the attention given to the drawings might be high. Nevertheless, consistency bias may occur in case of participants exchanging heavily during the study.

When grouped together to perform a collective creative activity, it is important that participants feel comfortable enough to share their ideas and voice comments toward other's ideas. This can be achieved by either selecting participants who know each other prior to the workshop, or by creating an atmosphere supporting constructive group creativity. These strategies were applied in the case studies presented in this paper as follows. In the three case studies participants knew each other beforehand. Additionally, CS1 participants' attitude was oriented toward creativity as part of the event they were involved in (a project seminar involving group reflective activities). In CS2, participants' reflective potential was triggered as part of the learning process they were engaged in (a course in UXD). As for CS3, an icebreaking game invited participant to think creatively from the onset of the workshop, and a general playful atmosphere was later maintained by the facilitators. These have been proven successful strategies to encourage participation. The level and way to establish playfulness need however to be adapted to the cultural and social characteristics of the participants, in order not to appear brusque, inappropriate or irrelevant.

Interpreting Results

Analysing qualitative data such as drawing and theatre plays can be challenging. Based on the literature and the experience gathered while conducting the activities documented in this paper, a few guidelines concerning result analysis are discussed in the following paragraphs.

Participants might respond negatively at first when asked to draw, as they might not feel comfortable about their drawing abilities. "*But I can't draw…*" was a typical reaction during the three case studies. It is essential to make clear that the "quality" of the drawing for this activity lies not in its artistic value, but rather in its ability to convey an idea, to express a memory, to illustrate a setup or a fact, etc. Moreover it is necessary to stress that the drawings are not judged in any way, they are merely a support for expression. Encouraging participants to use stick figures and words helps fight their possible discomfort or reticence. After this first barrier is overcome and participants completed their drawings, self-critiques disappeared and only a cheerful mood and the joy of having participated in a playful activity remained.

Similarly, the guidelines for the mini-plays created in the third case study were loose and encouraged the groups to be creative. In fact, the frame of the stories was implicitly defined by the previous activities conducted in the workshop, and as a result all groups stayed within the scope of the workshop theme. They used the opportunity to express themselves and this led to discovering potential use cases of technology in unconventional situations.

Being aware of the events unfolding at the time of the study is also important as they might influence participants involved in a creative group activity: The largest the event the higher the probability of impacting the group's creation. This phenomenon was particularly visible in the third case study, which took place in Japan less than two weeks after the March 11, 2011 disaster in the Tohoku region, which greatly affected the whole country. Especially the group plays reflected the difficult time, as all involved a dramatic plot and three out of the four plays explicitly included the massive wave of earthquakes that were still shaking the country at the time of the workshop. Individual exercises focusing on personal experiences such as the two first case studies and the first exercises in the third case study were not impacted by such event. They specifically focused on personal experiences and therefore referred to events from a relatively distant past.

Comparison to quantitative results

After performing the activities related so far in this paper, an online survey was conducted among 116 Danes and 102 Japanese to investigate various aspects of their everyday experience with TVs and mobile phones. Some differences between the two populations are reported to further argue for the need to consider cultural factors when conducting UX research. The survey mostly aimed at exploring interest

and behaviors related to second screen activities, however these issues will not be discussed here as they are irrelevant to this paper. Instead, we shall focus on the more generic UX aspects with mobile phones and television also reported in the survey and overlapping with the topics explored though the drawing- and drama-based workshops. In that regard, the survey respondents were asked to:

- name the most important features they consider when buying a new mobile phone
- describe what they like and dislike about their mobile phone and television (separately)
- express their expected feelings if they had no longer access to their mobile phone and television (separately)

Important buying factors are comparable in both countries: features (such as camera, calendar, and music player), design and price are the top three criterion influencing device acquisition. The features cited are secondary functions of the mobile phone, which were already found important for workshop participants (in CS3); although to a lesser extent than the primary, communicative, functions. The importance of these primary and secondary functions was confirmed by what respondents reported liking and disliking about their mobile phone, as functions such as calling and accessing Internet were frequently mentioned. This is also coherent with previous findings: The importance of mobile phone functions in the perception of the device has been previously established for Japanese and North Europeans (Swedes) in [2].

Then, respondents were asked to select the emotions that best match their expected feelings in case they could not use their mobile phone any longer. They could choose among Ekman et al.'s six basic emotions (this time including disgust and fear, as well as the possibility to freely name any other emotion). Both Danes and Japanese chose sadness as the dominant emotion they would most likely experience if they were suddenly deprived of mobile phone, confirming the results obtained in CS3.

Then they were asked to imagine that they had no longer access to their television. As previously, sadness was mostly chosen in Japan and Denmark. However, an especially large number of respondents (34% of Danes and 48% of Japanese) found that none of the six basic emotions suggested represented well their expected feeling in this situation. A potential explanation is actually the lack of reaction that would experience the respondents with no longer TV access, as further indicated by the additional emotions freely cited by participants. Indeed, indifference was frequently mentioned explicitly, which aligns with the results collected in CS3.

Finally, respondents described what they like and dislike about their television. Answers collected in Denmark differed visibly from those collected in Japan. The two predominant sources of positive feedback in Denmark are the content and the purpose of watching TV (catching up with news and being entertained). This matches the two functions mostly cited during CS3. In Japan however, the TV's performances are the main source of satisfaction with television, followed by content and purpose. The two populations also differ in the features they dislike about TV: It is considered a time waster by Danes, and the content available is a source of dissatisfaction for them. Japanese complain mostly about the content available and the specifications of their TV set. Often TV is appreciated for its relaxing or informative purpose but watchers tend to get caught up and keep on watching even though they lose interest in the programme, leading to frustration. When comparing these findings with those extracted from the drama workshop, the Danish survey respondents agree with the Japanese workshop participants in the general functions they appreciate the TV for, while the Japanese survey respondents pointed out more specific topics.

CONCLUSION

This paper documented three case studies utilizing drawing and a drama workshop to investigate personal relationships with television and mobile technology, as well as to generate possible scenarios for such technology in a creative approach. To the extent of the knowledge acquired while conducting the two first case studies and during their analysis, drawing as a stand-alone technique and as part of a drama workshop seems a valuable technique for acquiring qualitative insights on the user experience with technology. The following statements have been verified and summarize the findings of the experiment so far:

1. Drawing helps create a relaxed and comfortable atmosphere in which test participants are willing to express personal matters,
2. The absence of boundaries in drawings further encourages participants to reveal personal aspects of their lives,
3. Responses are influenced by the experimental setup,
4. Analyzing drawings should start by focusing on the primary data (directly relevant to the topic), before possibly including secondary data to broaden the perspective,
5. Drawings should be used in triangulation with other research methods.

The final case study further acknowledged the benefits of drawings when integrated in a drama workshop. It also verified the usefulness of engaging participants in theatre-based activities for visualizing UX with technology. This was successfully investigated in the case of a workshop encompassing self-reflection on personal experience and scenario elicitation in group, conducted in a cultural environment where verbal communication was a challenge.

These findings however need to be further investigated, combined with additional user experience evaluations as suggested in the literature and compared to other inquiry methods in order to assess the performance of drawings as an HCI research tool. A first step in that direction has been documented in the paper, comparing the qualitative results

collected through the aforementioned activities to those emerging from an online cross-cultural survey. The outcome of preliminary comparisons between the approaches demonstrates the benefits of applying both qualitative and quantitative inquiry methods when exploring user experience with technology. Indeed in the present case, not only the qualitative findings re-emerged from the survey and thus further strengthened them, but the two strategies also generated a richer pool of results from which future research questions emerged. In particular, conducting these studies in two distinct cultural settings led to the identification of common traits and singularities, which would be worth investigating further.

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